Data Sharing Plan

The Watershed-marine linkages and the impact of watershed restoration on land-based sedimentation to USVI coral reefs, NA13NMF4630189, implemented by the University of San Diego will generate environmental data and information, including marine and terrestrial monitoring data, see below for details on types of data collected between 2009-2014. Data will be collected by Dr. Sarah Gray and Dr. Carlos Ramos-Scharron according to the procedures described in their 2013 proposal, and stored on the USD web server and the original data will be kept by the researchers. The data will be available to the public upon request starting no later than 2016 or two years after the data was created. The data is anticipated to be on the University of San Diego webserver indefinitely.

For data requests or more information, please contact Sarah Gray at sgray@sandiego.edu for marine data and Carlos Ramos-Scharron cramos_scharron@yahoo.com regarding the terrestrial data sets. In the past, similar data has been shared by posting it on the University of San Diego web server. All future sub-awardees not identified in this plan will have as a condition on their contract acceptance of this data sharing plan. Any additional data sharing stipulations for future sub-awardees may be outlined at that time and described in their contract.

I. TYPES OF DATA GENERATED:

The proposed research program will generate the following types of data: (1) Rainfall intensity data; (2) Peak water stage data from ~70 sites located along ghuts and road drainage points; (3) Real time peak stage data at four locations and streamflow data from four locations; (4) Localized saturated hydraulic conductivity (i.e., similar to soil permeability) data from both unpaved road and undisturbed soil surfaces; (4) Water level data and sediment deposition at the Kingshill water-sediment detention structure; (5) Environmental data from marine monitoring; (6) Correlative data showing the relationships among marine monitoring matrices and between terrestrial and marine matrices; and (7) Data summaries.

1) *Rainfall intensity data*:
   a. Project rain gauge: Located within the Shipwreck Ghut Catchment; monitors rainfall intensity data at a temporal resolution of 15 min.
   b. Coral Bay Community Council rain gauges: Two to three sites are active within Upper Carolina, Gerda Marsh Development area, and Bordeaux Mountain: all recording-type rain gauges with a resolution of 15 min.

2) *Peak crest gauges*:
   Measures maximum water level at a ghut or channeled water conduit during periods extending from several days up to two weeks. A total of 70 crest gauges within the Coral Bay watershed are being monitored.

3) *Automated water level monitoring*:
   a. *Stage monitoring*: Water level monitoring takes place at four locations. This simply provides information on the periods during which water was

flowing along the ghuts. No streamflow data is possible given the convoluted hydraulics of these sites as no pre-existing equation will allow us to convert our stage readings to volumetric flow rates. The information is valuable as it gives us the exact moment when runoff is activated at each location and the duration of flow.

b. *Stage & streamflow monitoring*: Acceptable physical settings for converting stage data to volumetric flow rates exist at four locations where pressure transducers have been located (Lower Shipwreck Ghut, Outlet of Johny Horn Catchment, portions of Constanza and flowing out into the bay through the Oasis food stand, and the main Coral Bay Ghut within the valley). This information not only provides the timing of runoff events, but also their actual volumetric outflow rates.

4) *Saturated Hydraulic Conductivity*:

The ability of unpaved road surfaces and natural soils to infiltrate rainwater is being quantified by way of the Guelph Permeameter. Data analysis allows the development of infiltration capacity curves which can be used to estimate the quantity of runoff each type of surface generates during simulated rainfall conditions. This was determined at 20 unpaved road sites and 20 undisturbed soil locations.

5) *Kingshill Detention Structure*:

a. Water levels at a 10min resolution are being monitored at this location with a pressure transducer. These data will be used in combination with topographical surveys to estimate the volume of water stored in the pond at any given time. Analyses will allow us to evaluate the adequacy of the pond's dimensions to handle runoff being generated from the upstream catchment. The information can also be used to run simulations to determine the efficacy of the pond in handling runoff as it begins to fill up with sediment.

b. Sediment depositional rates are being monitored with a series of ten staff gagues. The staff gauges (i.e., sturdy and weather resistant rulers) were placed vertically and secured with rebar as part of the ARRA efforts in 2012. As sedimentation occurs, the staff gauges record changes in the depth of the pond which provide an estimate of sediment yield rates from the catchment and estimate the longevity of the structure and maintenance schedules.

6) *Environmental data from marine monitoring*:

a. *Sediment traps* (for 12 sampling periods at 15 sites): gross sediment accumulation rate (mg/cm2/day); % organic, % carbonate, % terrigenous, organic, carbonate, and terrigenous accumulation ($mg/cm^2/day$), grain size matrices (mean, median, mode, size distributions, % clay, % silt, % sand).

b. *Marrot current meters (measurements every 10 minutes for 8 months at 3-5 stations):* water velocity (m/s) and water direction (deg.).

c. *Nephelometers (measurements every 10 minutes for 8 months at 3-5 stations):* sediment deposition (mg/cm2). turbidity (NTU).

7) *Correlative data*:
   a. Correlations/comparisons between sediment monitoring methods for each location & sampling period (accumulation rates, composition, grain-size)
   b. Correlations/comparisons of sedimentation & hydrographic matrices between sites (reference vs. mitigated) for each sampling period, or storm/runoff event (accumulation rates, composition, grain-size)
   c. Correlations/comparisons of sedimentation matrices for sites or groups of sites over time.

8) *Data summaries*:
   a. Major patterns and general trends in both environmental and correlative data will be summarized as summary graphs.

II. TARGET DATE FOR SHARING:

1)	Rainfall intensity data:	12/31/15
2)	Peak crest gauges:	12/31/15
3)	Automated water levels:	07/30/16
4)	Saturated hydraulic conductivity:	12/31/15
5)	Kingshill detention structure:	07/30/16
6)	Environmental data from marine monitoring:	12/31/15
7)	Correlative data:	03/15/16
8)	Data summaries:	07/30/16

III. DATA AND METADATA STANDARDS:

Rainfall as well as continuous stage, streamflow, and detention pond volumetric estimate data will be saved as time series in Excel files. Time series graphs will accompany the data. A GIS shapefile will also be prepared to identify the location of the study sites (Map will also be available as a picture file).

Peak crest gauge data will also be saved as Excel files containing the dates, readings, and field observations for each of the monitoring sites. Graphs that will visually aid in differentiating time periods when runoff occurred from those when no runoff was recorded will accompany the data sets. A GIS shapefile will also be prepared to identify the location of the study sites (Map will also be available as a picture file).

Saturated hydraulic conductivity data will also be saved in Excel files. These will contain the raw data collected in the field and analyses used to calculate hydraulic parameters such as sorptivity and saturated hydraulic conductivity. A GIS shapefile will also be prepared to identify the location of the study sites (Map will also be available as a picture file).

Data from sediments generated by the sediment traps will be available as Excel or text files. The nephelometer and current meter data will be preserved as: a) native file formats in the meter software and b) as excel or txt files. A GIS shapefile will also be prepared to identify the location of the study sites (Map will also be available as a picture file).

Correlation/comparison data will be presented as graphs and tables in Excel or SPSS or other statistical program files.

IV. DATA SHARING AND ACCESS

A. *Peer-Reviewed Publications*. The main mechanism for disseminating interpretations of our data in a summarized format will be in peer reviewed publications. Most publications currently allow data tables to be uploaded to the journal website as supplementary material.

B. *Student and Faculty Conference Presentations*. Information from this project will be disseminated through student and faculty conference presentations. PowerPoint presentations and posters from conference presentations will be archived on the USD website and linked through public webpages at USD and through our USVI partner websites (CBCC & Island Resources Foundation).

C. *Web-Based Methods*. We will establish a web presence through the USD web server with the main goal of disseminating raw data tables, summary data and reports, presentations and journal articles.

V. PLANS FOR ARCHIVING AND PRESERVATION OF ACCESS

The website associated with the proposed project will be hosted by the University of San Diego and will be indefinitely active and available to the community. Data will also be archived at the Coral Bay Community Council office in DVD or hard drives. Data tables and summary reports will be given to NOAA for back-up archiving. Hard copies of data and reports will be stored at USD in the P.I.'s file cabinet and available by request.